Emissions Unit - General **Form EU0**

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
03/27/07

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

Company Name:	Facility Name:	Facility ID No:
NxEdge, Inc.		001-00202
Brief Project Description:	Facility Equipment and Throughput Modifications	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

1. Emissions Unit (EU) Name:	BONDER/BLASTER
2. EU ID Number:	BB1 (BLASTING OPS, SEE ALSO "BONDING OPS")
3. EU Type:	☒ New Source ☐ Unpermitted Existing Source ☒ Modification to a Permitted Source -- Previous Permit #:P-040007 Date Issued: 07/22/2005
4. Manufacturer:	NXEDGE STAND USING CLEMCO INDUSTRIES SPRAY GUN
5. Model:	CLEMCO 1648
6. Maximum Capacity:	1 TUBE BLASTED EVERY 15 MIN (200 LBS MEDIA PER HR)
7. Date of Construction:	AWAITING PTC MODIFICATION APPROVAL- 2Q 2008
8. Date of Modification (if any)	AWAITING PTC MODIFICATION APPROVAL- 2Q 2008
9. Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 18.

EMISSIONS CONTROL EQUIPMENT

10. Control Equipment Name and ID:	Cyclone and Filter Assembly- MAC3		
11. Date of Installation:	2Q 2008	12. Date of Modification (if any):	
13. Manufacturer and Model Number:	MAC Cyclone and Filter Assembly retrofitted with Farr HMPTUF Cartridge Filters (16)		
14. ID(s) of Emission Unit Controlled:	BB1 and FS1		
15. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
16. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	99.99%	99.99%				

17. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

18. Actual Operation	48 HRS/WEEK, 50 WEEKS/YR (NON-CONTINUOUS)
19. Maximum Operation	4380 HRS/YEAR

REQUESTED LIMITS

20. Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, check all that apply below)
☐ Operation Hour Limit(s):	
☐ Production Limit(s):	
☐ Material Usage Limit(s):	
☐ Limits Based on Stack Testing	Please attach all relevant stack testing summary reports
☒ Other:	EMISSION LIMITS ON TAPS AND PM10
21. Rationale for Requesting the Limit(s):	EMISSIONS MUST BE CONTROLLED TO COMPLY WITH AMBIENT AIR QUALITY STANDARDS

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Company Name:	Facility Name:	Facility ID No:
NxEdge, Inc.		001-00202
Brief Project Description:	Facility Equipment and Throughput Modifications	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

1. Emissions Unit (EU) Name:	BONDER/BLASTER
2. EU ID Number:	BB1 (BONDING OPS, SEE ALSO "BLASTER OPS")
3. EU Type:	☒ New Source ☐ Unpermitted Existing Source ☒ Modification to a Permitted Source -- Previous Permit #:P-040007 Date Issued: 07/22/2005
4. Manufacturer:	NXEDGE STAND WITH SULZER METCO APPLICATOR
5. Model:	SMARTARC PPG
6. Maximum Capacity:	NI WIRE: 15 MIN PER TUBE, SS WIRE: 60 MIN PER TUBE
7. Date of Construction:	AWAITING PTC MODIFICATION APPROVAL- 2Q 2008
8. Date of Modification (if any)	AWAITING PTC MODIFICATION APPROVAL- 2Q 2008
9. Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 18.

EMISSIONS CONTROL EQUIPMENT

10. Control Equipment Name and ID:	Cyclone and Filter Assembly- MAC3		
11. Date of Installation:	2Q 2008	12. Date of Modification (if any):	
13. Manufacturer and Model Number:	MAC Cyclone and Filter Assembly retrofitted with Farr HMPTUF Cartridge Filters (16)		
14. ID(s) of Emission Unit Controlled:	BB1 and FS1		
15. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
16. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	99.99%	99.99%				

17. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

18. Actual Operation	48 HRS/WEEK, 50 WEEKS/YR (NON-CONTINUOUS)
19. Maximum Operation	4380 HRS/YEAR

REQUESTED LIMITS

20. Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, check all that apply below)
☐ Operation Hour Limit(s):	
☐ Production Limit(s):	
☐ Material Usage Limit(s):	
☐ Limits Based on Stack Testing	Please attach all relevant stack testing summary reports
☒ Other:	EMISSION LIMITS ON TAPS AND PM10
21. Rationale for Requesting the Limit(s):	EMISSIONS MUST BE CONTROLLED TO COMPLY WITH AMBIENT AIR QUALITY STANDARDS

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IDENTIFICATION

Company Name:	Facility Name:	Facility ID No:
NxEdge, Inc.		001-00202
Brief Project Description:	Facility Equipment and Throughput Modifications	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

1. Emissions Unit (EU) Name:	FINISHING STAND
2. EU ID Number:	FS1
3. EU Type:	☐ New Source ☐ Unpermitted Existing Source ☒ Modification to a Permitted Source -- Previous Permit #:P-040007 Date Issued: 07/22/2005
4. Manufacturer:	NXEDGE
5. Model:	HOMEMADE
6. Maximum Capacity:	1 TUBE EVERY 30 MINUTES
7. Date of Construction:	2003
8. Date of Modification (if any)	AWAITING PTC MODIFICATION APPROVAL- 2Q 2008
9. Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 18.

EMISSIONS CONTROL EQUIPMENT

10. Control Equipment Name and ID:	Cyclone and Filter Assembly- MAC3		
11. Date of Installation:	2Q 2008	12. Date of Modification (if any):	
13. Manufacturer and Model Number:	MAC Cyclone and Filter Assembly retrofitted with Farr HMPTUF Cartridge Filters (16)		
14. ID(s) of Emission Unit Controlled:	BB1 and FS1		
15. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
16. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	99.99%	99.99%				

17. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

18. Actual Operation	48 HRS/WEEK, 50 WEEKS/YR (NON-CONTINUOUS)
19. Maximum Operation	8760 HRS/YEAR

REQUESTED LIMITS

20. Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, check all that apply below)
☐ Operation Hour Limit(s):	
☐ Production Limit(s):	
☐ Material Usage Limit(s):	
☐ Limits Based on Stack Testing	Please attach all relevant stack testing summary reports
☒ Other:	EMISSION LIMITS ON TAPS AND PM10
21. Rationale for Requesting the Limit(s):	EMISSIONS MUST BE CONTROLLED TO COMPLY WITH AMBIENT AIR QUALITY STANDARDS

3.5 STS Bonder/Blaster and Finishing Stand

STS tube preparation and finishing is carried out on the Bonder/Blaster and Finishing Stand. The Bonder/Blaster is a new, dual use piece of process equipment that will replace existing equipment that performs the same function. The Bonder/Blaster is used to clean and roughen tubes with aluminum oxide media prior to coating, and to apply a "bond coat" to tubes in preparation for coating in Gen3, Gen4 or Gen5. The Finishing Stand is an existing, permitted piece of equipment that is used to hold tubes during manual finish sanding of coated tubes with a coated abrasive. NxEdge requests permit limits which will allow unrestricted blasting and finishing sanding of tubes (based on equipment capacity) with the exception of those steps which involve nickel or chromium(VI) emissions.

Emissions from the Bonder/Blaster and Finishing Stand are controlled via a new downstream cyclone and cartridge filter assembly (MAC3) manufactured by the MAC Equipment Company. Previously FARR1 controlled emissions from the Bonder/Blaster and Finishing Stand. The MAC3 filter assembly is a MAC unit loaded with 16 high-efficiency filter cartridges. A 2300 CFM fan located on the outlet of the filter assembly will draw air from the process area, through the tube stands, and then through ducting to the cyclone and filter assembly, both located outdoors. The fan will discharge vertically directly above the filter assembly at a height of 14 feet through a 14 inch duct. The emission point, EP-14, is shown on Form PP.

Farr HMPTUF Retrofit Filters are loaded in MAC3. The Farr filters provide greater control efficiency than MAC filters. Attached is a filter certification letter from Farr APC specifying 99.99% control efficiency for these filters.

Metal and particulate emissions from the Bonder/Blaster and Finishing Stand are calculated in Table 3-5A (attached). All particulate emissions are conservatively to be PM_{10}.

Blasting Operations and TAP Emissions

When the Bonder/Blaster is in blasting operations, a Clemco Model 1648 Spray Gun is used to spray aluminum oxide media at the exterior of tubes typically measuring 6-10 feet long and 6 inches in diameter. Tube setup, blasting and removal require a minimum of 15 minutes per tube and approximately 50 lbs of aluminum oxide media.[8] Blasting primarily removes only dirt and greases, but to be conservative for these calculations, it is assumed 0.001 inches of metal are also removed from the tube surface.

Uncontrolled emissions for the Blaster are estimated using these parameters, 24 hours per day and 365 days per year. While the new Bonder/Blaster is designed to hold tubes upright in the vertical

[8] "Re: Final PTC Needs- Plasma Area," email correspondence, Diana Grimmett (NxEdge) to Sarah Stine (TEM), 09/19/2007.

position above a drum so that the majority of the sprayed media will fall and can be easily collected, uncontrolled emissions from blasting operations were estimated assuming that all of the media and metal removed are carried out of the Blaster and enter the exhaust.

As shown in Table 3.5A (Tube Prep), the uncontrolled emissions of all TAPs emitted during Blaster operations are higher than the IDAPA 58.01.01.585 and 586 screening emission levels and would likely violate ambient air quality standards. Therefore, controlled emissions are calculated.

Controlled TAP emissions from the Blaster are estimated based on a control efficiency of 99.99%, as certified by the filter manufacturer, and restrictions on the number of targets (tubes) blasted annually. These restrictions, approximately 1500 targets blasted per year, are required to meet ambient air quality standards for nickel. The controlled TAP emission rates from the Blaster are combined with the Bonder and Finishing Stand emissions in the TAP Emissions Summary in Table 3.5A (page 2). These are the proposed permit limits for the MAC3.

Bonding Operations and TAP Emissions

When the Bonder/Blaster is in Bonding operations, a Sulzer Metco Model SmartArc PPG Spray Gun is used to apply nickel or 18/8 SS wire bond to the exterior of the 304 SS tubes. During nickel wire bonding operations, tube setup, bonding and removal require a minimum of 15 minutes per tube and two to six pounds of nickel wire per tube.[9] 18/8 SS bond coating is a new operation being proposed in this PTC application. NxEdge estimates 35 lbs of wire and one hour per tube will be required for this step.

Uncontrolled emissions for the Bonder are estimated using these times and wire usage rates, 24 hours per day and 365 days per year. Uncontrolled emissions from bond coating operations are reduced by the amount of wire deposited on the tube. The average deposition efficiency (DE) for nickel bond, as determined by NxEdge testing, is 69 wt%. Table 3-5B details the DE test results. An estimated DE of 65 wt% was used in the Table 3-5A calculations for the future 18/8 SS bond coating.

[9] "Re: Final PTC Needs- Plasma Area," email correspondence, Diana Grimmett (NxEdge) to Sarah Stine (TEM), 09/19/2007.

Table 3-5B: Bonder Deposition Efficiency

Date Sprayed	Target Type (number of bond coat passes)	Pre-Bond Tube Weight (lbs)	Final Bonded Tube Wt. (lbs)	Bond Coat Used (lbs)	Deposition Efficiency (%)
31-Oct-07	Si (2)	95.7	98.2	3.7	67.6%
31-Oct-07	Si (2)	94.9	97.2	3.4	67.6%
31-Oct-07	Si (2)	94.8	97.7	3.5	82.9%
31-Oct-07	Si (2)	95.0	97.1	3.4	62.9%
1-Nov-07	ZnAl (1)	96.0	97.3	2.0	65.0%
1-Nov-07	ZnAl (1)	98.2	99.7	2.2	68.2%
1-Nov-07	ZnAl (1)	97.4	99.4	2.9	69.0%
5-Nov-07	TiOx (3)	100.1	104.0	5.6	69.6%
5-Nov-07	TiOx (3)	103.5	107.6	5.9	69.5%
				Average =	69.1%

Per the MSDS, the 18/8 SS bond wire contains 19 wt% chromium. While hexavalent chromium (Cr(VI)) is not present in the wire, industry stack tests have measured emissions of Cr(VI) from thermal spraying facilities, indicating that some chromium conversion occurs during the spray process.[10] This conversion was quantified in a 2004 California Air Resources Board report that surveyed existing research and sponsored studies to develop emission estimation methods for thermal spraying.[11] An excerpt of the study is attached in Section 3.3 and includes a summary table (Table C-3) of emission factors for Cr(VI) emissions based on the amount of chromium in the process feed. The uncontrolled emission factor for the twin-wire electric arc spray process is 0.00696 pounds Cr(VI) per pound of chromium sprayed. This factor is used to estimate Cr(VI) uncontrolled emissions from the Bonder.

As shown in Table 3.5A (Bond Coating), the uncontrolled emissions of most of the TAPs emitted during Bonder operations are higher than the IDAPA 58.01.01.585 and 586 screening emission levels and would likely violate ambient air quality standards. Therefore, controlled emissions are calculated.

Controlled TAP emissions from the Bonder are estimated based on a control efficiency of 99.99 wt%, as certified by the filter manufacturer, and restrictions on the amount of bond wire applied annually. These restrictions, 6000 pounds of nickel wire and 52500 pounds of 18/8 SS wire per

[10] "Appendix C: Methodology for Estimating Hexavalent Chromium Emissions from Thermal Spraying," California Air Resources Board, www.arb.ca.gov/regact/thermspr/appc.doc.
[11] Ibid.

year, are required to meet ambient air quality standards for nickel and Cr(VI). The controlled TAP emission rates from the Bonder are combined with the Blaster and Finishing Stand emissions in the TAP Emissions Summary in Table 3.5A (page 2). These are the proposed permit limits for the MAC3.

Finishing Operations and TAP Emissions

In the Finishing Stand, coated tubes are brought into exact dimensional specifications. This is done by hand using coated abrasives. Tube setup, sanding and removal require a minimum of 30 minutes per tube.[12] Coating removal has been found by NxEdge to average 0.010 inches from the tube exterior. Uncontrolled emissions for the Finishing Stand are estimated using these parameters, 24 hours per day and 365 days per year. Uncontrolled emissions are estimated assuming that all of the coating removed is carried out of the Finishing Stand and enters the exhaust.

As shown in Table 3.5A (Tube Finishing), the uncontrolled emissions of most TAPs emitted during Finishing Stand operations are higher than the IDAPA 58.01.01.585 and 586 screening emission levels and would likely violate ambient air quality standards. Therefore, controlled emissions are calculated.

Controlled TAP emissions from the Finishing Stand are estimated based on a control efficiency of 99.99 wt%, as certified by the filter manufacturer, and include restrictions on the number of Ni-Cr and Ni-Va targets finished annually. These restrictions, 30 Ni-Cr and 10 Ni-Va tubes finished per year, are required to meet ambient air quality standards for nickel. The controlled TAP emission rates from the Finishing Stand are combined with the Bonder and Blaster emissions in the TAP Emissions Summary in Table 3.5A (page 2). These are the proposed permit limits for the MAC3.

Criteria Pollutant Emissions

Estimated emissions of lead and PM_{10} from the Bonder, Blaster and Finishing Stand are calculated in the Criteria Pollutants Emissions summary in Table 3.5A (page 2).

Controlled annual PM_{10} emissions from MAC3 are calculated based on continuous operations 8760 hours per year and a control efficiency of 99.99 wt%, as certified by Farr. Controlled hourly PM_{10} emissions are based on the 0.002 grains per cubic foot filter outlet rate guaranteed by Farr at the maximum allowable filter loading. Permitting at this rate allows flexibility if short term particulate feed rates are higher than expected. Based on these control efficiencies, the controlled hourly and annual PM_{10} rates are 0.043 pounds per hour and 0.050 tons per year, proposed permit limits.

A small amount of lead is present in the Zn/Al coating applied in Gen5. When this type of coated type is finished, it is possible that lead could be emitted. However, as shown in Table 3.5A, potential lead emissions are from MAC3 are far below any level of regulatory concern.

[12] "Re: Final PTC Needs- Plasma Area," email correspondence, Diana Grimmett (NxEdge) to Sarah Stine (TEM), 09/19/2007.

Table 3-5A: STS Area Emissions- Bonder/Blaster and Finishing Stand (page 1)

EMISSION CALCULATIONS WITH **UNRESTRICTED** FEED AND PRODUCTION RATES

GBU Source: PLBBMAC

	Common Name (Trade Name)	Content	CAS Number	Content Conc. (wt% per MSDS)	Application Device	Operating Time per Target (hrs) Note 1	Unrestricted Daily Targets	Unrestrctd Annual Targets Note 2	Mat'l Used per Target (lbs) Note 3	Unrestrctd Daily Use (lbs)	Unrestrctd Annual Use (lbs)	Material Retention on Target (%) Note 4	Uncontrolled Hourly Emissions (lb/hr)	TAP Screening Emission Level (Averaging Period, lb/hr)		Uncont. Annual Emissions (lb/yr)	MAC3 Filter Unit: Filter Type	Control Equipment Efficiency (%) Note 7	Controlled Hourly Emissions (lb/hr)	Controlled Annual Emissions (lb/yr)
Bond Coating	Ni Bond Wire	Nickel	7440-02-0	95.0%	Bonder/ SmartArc	0.25	96	17520	4.0	384	70080	68%	2.432	Annl	2.7E-05	21304	Farr HMPTUF Retrofit Cartridges	99.99%	2.43E-04	2.1
		Aluminum	7429-90-5	5.0%									0.256	24 hr	0.667	1121			2.56E-05	0.112
		Molybdenum	7439-98-7	5.0%									0.256	24 hr	0.667	1121			2.56E-05	0.112
	18/8 Stainless Steel BondWire	Iron	7439-89-6	69%		1	24	4380	35	840	153300	65%	8.453	24 hr	non-TAP	37022		99.99%	8.45E-04	3.7
		Chromium	7440-47-3	19%									2.328	24 hr	0.033	10194			2.33E-04	1.0
		Nickel	7440-02-0	10%									0.613	24 hr	2.7E-05	5366			6.12E-05	0.54
		Manganese	7439-96-5	2%									0.245	24 hr	0.333	1073			2.45E-05	0.11
		Cobalt	7440-48-4	1%									0.123	24 hr	0.0033	537			1.22E-05	0.054
		Cr (VI) Note 5	18540-29-9	0%									2.31E-02	Annl	5.6E-07	203			2.31E-06	0.020
Tube Prep	Al Oxide Media	Al_2O_3	1344-28-1	100%	Blaster	0.25	96	17520	50	4800	876000	0%	200	24 hr	0.667	876000		99.99%	0.020	87.6

	Common Name (Trade Name)	Content	CAS Number	Content Conc. (wt% per MSDS)	Application Device	Operating Time per Target (hrs) Note 1	Unrestricted Daily Targets	Unrestrctd Annual Targets Note 2	Mat'l Removed per Target (in) Note 6	Unrestrctd Daily Removal (lbs) Note 6	Unrestrctd Annual Removal (lbs)	Material Retention on Target (%) Note 4	Uncontrolled Hourly Emissions (lb/hr)	TAP Screening Emission Level (Averaging Period, lb/hr)		Uncont. Annual Emissions (lb/yr)	MAC3 Filter Unit: Filter Type	Control Equipment Efficiency (%) Note 7	Controlled Hourly Emissions (lb/hr)	Controlled Annual Emissions (lb/yr)
Tube Prep	304 Stainless Steel: Prep Sanding	Iron	7439-89-6	74.0%	Blaster	0.25	96	17520	0.001	27.4	5008	0%	0.846	24 hr	non-TAP	3706	Farr HMPTUF Retrofit Cartridges	99.99%	8.46E-05	0.37
		Chromium	7440-47-3	20.0%									0.229	24 hr	0.033	1002			2.29E-05	0.10
		Nickel	7440-02-0	10.5%									0.060	Annl	2.7E-05	526			6.00E-06	0.053
		Manganese	7439-96-5	2.0%									0.023	24 hr	0.333	100			2.29E-06	0.010
		Silicon	7440-21-3	1.0%									0.011	24 hr	0.667	50			1.14E-06	0.0050
Tube Finishing	Moly Coated Tube	Molybdenum	7439-98-7	100%	Finishing Stand	0.50	48	17520	0.010	175.1	63924	0%	7.297	24 hr	0.667	63924	Farr HMPTUF Retrofit Cartridges	99.99%	7.30E-04	6.4
	NiCr Wire	Nickel	7440-02-0	50%		0.50	48	17520	0.010	137.4	50136	0%	2.862	Annl	2.7E-05	25068		99.99%	2.86E-04	2.51
		Chromium	7440-47-3	50%									2.862	24 hr	0.033	25068			2.86E-04	2.51
	NiVa Wire	Nickel	7440-02-0	90%		0.50	48	17520	0.010	128.8	47003	0%	4.829	Annl	2.7E-05	42303		99.99%	4.83E-04	4.2
		Vanadium	7440-62-2	20%									1.073	24 hr	0.003	9401			1.07E-04	0.94
	Si/Al Coated Tube	Silicon	7440-21-3	100%		0.50	48	17520	0.010	41.2	15041	0%	1.717	24 hr	0.667	15041		99.99%	1.72E-04	1.50
		Aluminum	7429-90-5	60%									1.030	24 hr	0.667	9025			1.03E-04	0.90
	Tin Coated Tube	Tin	7440-31-5	100%		0.50	48	17520	0.010	125.3	45750	0%	5.223	24 hr	0.133	45750		99.99%	5.22E-04	4.57
	TiO_2 Coated Tube	TiO_2	13463-67-7	100%		0.50	48	17520	0.010	72.1	26322	0%	3.005	24 hr	non-TAP	26322		99.99%	3.00E-04	2.63
	Zr Coated Tube	Zirconium Oxide	1314-23-4	91%		0.50	48	17520	0.010	94.4	34469	0%	3.581	24 hr	0.333	31367		99.99%	3.58E-04	3.14
		Yttrium Oxide	1314-36-9	13%									0.512	24 hr	0.067	4481			5.12E-05	0.448
		Hafnium Oxide	12055-23-1	1.8%									0.071	24 hr	0.033	620			7.08E-06	0.062
	Zn/Al Coated Tube	Zinc	7440-66-6	99.0%		0.50	48	17520	0.010	121.9	44496	0%	5.03	24 hr	0.667	44051		99.99%	5.03E-04	4.41
		Aluminum	7429-90-5	16.5%									0.84	24 hr	0.667	7342			8.38E-05	0.73
		Cadmium	7440-43-9	0.005%									2.54E-04	Annl	3.7E-06	2.22			2.54E-08	2.22E-04
		Copper	7440-50-8	0.75%									0.038	24 hr	0.067	334			3.81E-06	0.0334
		Lead	7439-92-1	0.007%									3.56E-04	24 hr	non-TAP	3.11			3.56E-08	3.11E-04

EMISSION CALCULATIONS WITH **RESTRICTED ANNUAL FEED AND** PRODUCTION RATES (Note 8)

GBU Source: PLBBMAC

	Common Name (Trade Name)	Content	CAS Number	Content Conc. (wt% per MSDS)	Application Device	Restricted Annual Targets	Mat'l Used per Target (lbs) Note 3	Restricted Annual Use (lbs)	Material Retention on Target (%) Note 4	MAC3 Filter Unit: Filter Type	Cartridge Filter Efficiency (%) Note 7	Cont. Annual Avg Emissions (lb/hr)	Controlled Annual Emissions (lb/yr)
Bond Coating	Ni Bond Wire	Nickel	7440-02-0	93.0%	Bonder/ SmartArc	1500	4.0	6000	68%	Farr HMPTUF Retrofit Cart.	99.99%	2.04E-05	0.179
		Aluminum	7429-90-5	95.0%								--	0.182
		Molybdenum	7439-98-7	5.0%								--	0.010
	18/8 Stainless Steel BondWire	Iron	7439-89-6	69%		1500	35	52500	65%		99.99%	--	1.268
		Chromium	7440-47-3	19%								--	0.349
		Nickel	7440-02-0	10%								2.10E-05	0.184
		Manganese	7439-96-5	2%								--	0.037
		Cobalt	7440-48-4	1%								--	0.0184
		Cr (VI) Note 5	18540-29-9	0%								7.93E-07	0.0069

	Common Name (Trade Name)	Content	CAS Number	Content Conc. (wt% per MSDS)	Application Device	Restricted Annual Targets	Mat'l Removed per Target (in) Note 6	Restrctd Annual Removal (lbs) Note 6	Material Retention on Target (%) Note 4	MAC3 Filter Unit: Filter Type	Cartridge Filter Efficiency (%) Note 7	Cont. Annual Avg Emissions (lb/hr)	Controlled Annual Emissions (lb/yr)
Tube Prep	304 Stainless Steel: Prep Sanding	Iron	7439-89-6	74.0%	Blaster	1500	0.001	428.8	0%	Farr HMPTUF Retrofit Cartridges	99.99%	--	0.032
		Chromium	7440-47-3	20.0%								--	0.009
		Nickel	7440-02-0	10.5%								5.14E-07	0.0045
		Manganese	7439-96-5	2.0%								--	0.0009
		Silicon	7440-21-3	1.0%								--	4.29E-04
Finish	NiCr Wire	Nickel	7440-02-0	50.0%	Finishing Stand	30	0.010	85.9	0%	Farr HMPTUF Retrofit Cartridges	99.99%	4.90E-07	0.0043
		Chromium	7440-47-3	50.0%								--	0.0043
	NiVa Wire	Nickel	7440-02-0	90.0%		10	0.010	26.8	0%		99.99%	2.76E-07	0.0024
		Vanadium	7440-62-2	20.0%								--	5.37E-04

Notes:
1. Nickel Wire bonding and blasting operations (including set-up time) require a minimum of 15 minutes per tube. SS Wire bonding operations (future) are projected to require a minimum of one hour per tube. Finishing sanding of tubes requires a minimum of 30 minutes per tube.
2. Bonding and blasting are done on the same piece of equipment (Bonder/Blaster), so assume half the year is spent blasting and half the year is spent bonding.
3. Nickel Wire use varies from 2 to 6 pounds per tube depending on type of tube (see Table 3-5B). 4 lbs of coating used for these calcs. SS Wire bonding (future op) is projected to use 35 lbs of coating per tube. 50 lbs of media used per tube to blast.
4. Nickel Wire coating depostion efficiency based on NxEdge testing (see Table 3-5B). SS Wire DE is projected. For blasting and sanding, all media and removed coating is conservatively assumed to enter control emission equipment. In reality, a large percentage is retained in the blasting and finishing stands.
5. Conversion of chromium to hexavalent chromium in wire arc spray process is 0.00696 lb Cr(VI) generated per lb of Cr feed (source: CA Air Resources Board).
6. Prep sanding typically removes 0.001 inches from tube surface. Finish sanding typically removes 0.010 inches from tube surface.Tubes are 10 ft long and 5.25" OD. Specific Gravities used to calculate weight of mat'l removed: 304 SS =8.0, Mo =10.2, NiCr =8.0, NiVa =7.5, Si/Al =2.4, Sn =7.3, TiO2 =4.2, Zn/Al =7.1, ZrOx =5.5.
7. Cyclone efficiency (pre-filter) estimated at 80%, but no certification data available so cyclone emission control not included. For FARR filters, cartridge filter efficiency is is certified at 99.99% for particle sizes of 0.5 micron and larger.
8. Restrictions only required for chromium and nickel and only affect annual emission limits.

Table 3-5A: STS Area Emissions- Bonder/Blaster and Finishing Stand (page 2)

	Bonder/ Blaster and Finishing Stand	TAP Type (24 hr or Annual Avgd EL)	TAP Screening Emission Level (lb/hr)	Uncontrld.	Controlled Hourly Emissions		
				Proposed Mod. (lb/hr)	Current Permit (lb/hr)	Proposed Mod. (lb/hr)	Proposed Mod. (lb/yr)
Toxic Air Pollutants Emissions Summary	Aluminum	585 (24 hr)	0.667	202	0	0.0202	89.3
	Cadmium	586 (Annl)	3.7E-06	2.5E-04	0	2.54E-08	2.22E-04
	Chromium	585 (24 hr)	0.033	5.42	0	5.42E-04	3.63
	Chromium(6)	586 (Annl)	5.6E-07	0.023	0	7.93E-07	6.94E-03
	Cobalt	585 (24 hr)	0.067	0.123	0	1.22E-05	0.054
	Copper (dust)	585 (24 hr)	0.067	0.038	0	3.81E-06	0.033
	Hafnium	585 (24 hr)	0.033	0.071	0	7.08E-06	0.062
	Manganese	585 (24 hr)	0.333	0.268	0	2.68E-05	0.12
	Molybdenum	585 (24 hr)	0.667	7.55	0	7.55E-04	6.50
	Nickel	586 (Annl)	2.7E-05	10.8	0	4.26E-05	0.37
	Silicon	585 (24 hr)	0.667	1.73	0	1.73E-04	1.51
	Tin	585 (24 hr)	0.133	5.22	0	5.22E-04	4.57
	Vanadium Oxide[9]	585 (24 hr)	0.003	1.6	0	1.58E-04	1.38
	Yttrium	585 (24 hr)	0.067	0.512	0	5.12E-05	0.45
	Zinc	585 (24 hr)	0.667	5.03	0	5.03E-04	4.41
	Zirconium	585 (24 hr)	0.333	3.58	0	3.58E-04	3.14

	Bonder/ Blaster and Finishing Stand	Significant Emission Rate (tons/yr)	Uncontrolled Annual Emissions		Controlled Hourly Emissions		Controlled Annual Emissions			
			Current Permit (ton/yr)	Proposed Mod. (ton/yr)	Current Permit (lb/hr)	Proposed Mod. (lb/hr)	Current Permit (ton/yr)	Proposed Mod. (ton/yr)	Emission Change (ton/yr)	Change, % of Significant
Criteria Pollutants Emissions Summary	Lead	0.6	0	1.56E-03	0	3.56E-08	0	1.56E-07	1.56E-07	0.000026%
	PM_{10} (Note 10)	15	0	499.9	0	0.0429	0	0.050	0.050	0.3%

	Bonder/ Blaster and Finishing Stand	Controlled Emissions (tons/yr)
Hazardous Pollutants Emissions Summary	Cadmium	1.1E-07
	Chromium	1.8E-04
	Cobalt	2.7E-05
	Lead	1.6E-07
	Manganese	5.9E-05
	Nickel	1.9E-04
	Total =	4.6E-04

Notes: 9. Screening Emission Level for vanadium provided as V_2O_5. Assume all vanadium emissions become oxidized. V_2O_5 = 68 wt% V.

10. Total PM_{10} emissions based on maximum case bonder/blaster and finishing stand operations. Proposed Modificaton Uncontrolled Emissions based on continuous SS-wire bonding, blasting and moly tube finishing. Proposed Mod. controlled rates include control equipment efficiency.

1 General Description

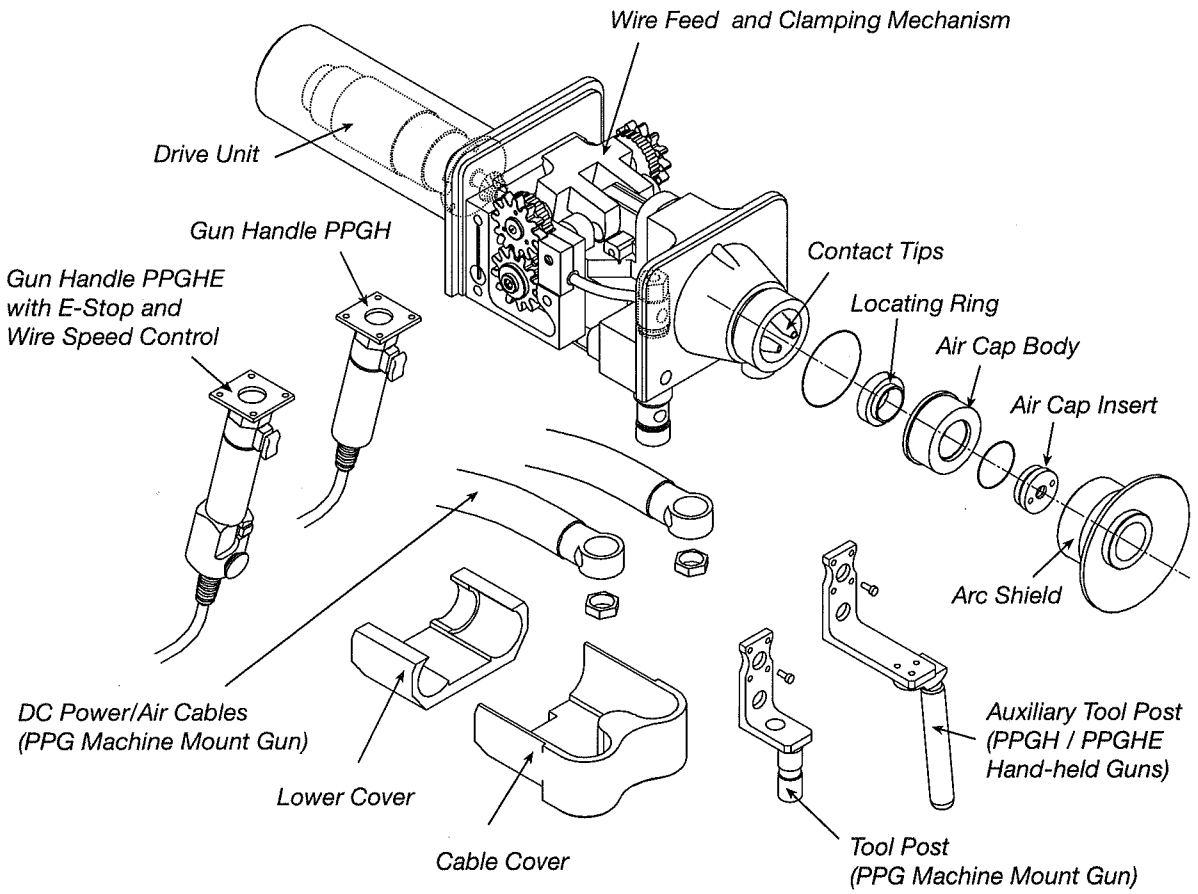
The high power capacity (400 Amps) allows SmartArc to deposit coatings from both hard and soft wires very quickly and economically. Hard wire coatings produced using the SmartArc system have excellent bond strength, high hardness, low porosity and are easily machined. When soft wires are used, exceptionally high speed coatings rates of up to 32 kg/h (70 lbs/hr) are possible.

SmartArc incorporates a leading-edge gun head design that delivers low-turbulence, nearly laminar air flow. This results in high deposition rates, very dense, low oxide coatings and a reduction in consumables and maintenance. Voltage measurement is at the gun for reliability of coating results.

A unique feature of SmartArc is load-sharing; a patented motor control method that provides "push-pull" coordination of the wire feed stock. As a result, wire feed is very smooth, allowing wire conduit cables of up to 15 meters (50 feet). This allows the SmartArc PPG gun to be mounted on a robot or other gun manipulation equipment, for added precision and automation. When the gun "pull" motor, acting as the controller, needs assistance, SmartArc senses the load and has the console motor "push" harder to ensure highly consistent wire feed.

Truly automated, SmartArc incorporates a rugged and reliable PLC (programmable logic control) computer technology for its advanced feature capability and provides diagnostics tests that are easily interpreted by the operator.

Three gun models are available for the SmartArc system. The PPG gun (CE conformant) is a machine-mount push-pull design. Hand-held models are also available as the PPGH and the CE-conformant PPGHE. The PPGHE gun incorporates an integrated, system-wide E-stop on the handle and a wire speed control.



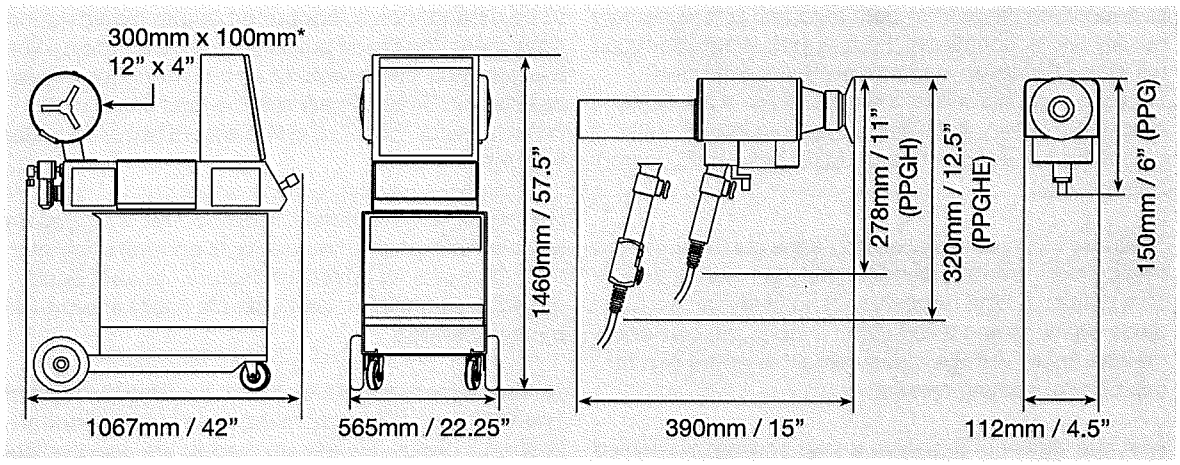
SmartArc™ Gun • Main Parts Overview

SULZER

Sulzer Metco

4 Technical Data

4.1 Dimensions



4.2 Specifications

350RU Power Supply			
Input Amperage	82 / 72 / 41 / 36	A	
Input Voltage	208 / 230 / 400 / 460	VAC	
Input Frequency	50 / 60	Hz	
Output Voltage	10 - 46	VDC	(100% duty cycle)
Output Amperage	80 - 400	A	(100% duty cycle)
Weight	174	kg	
	383	lbs	
Maximum ambient temperature	40°	C	
	104°	F	
PPC Console			
Air Pressure	2.4 - 4.2	bar	
	35 - 60	psi	
Air Flow	58 - 105	m^3/h	
	2200 - 4000	ft^3/hr	
Weight	132	kg	
	290	lbs	
Gun			
Wire Size*	1.6	mm	hard wire
	14	gauge	
Models (specify when ordering)	PPG		machine-mount, with tool post
	PPGH		hand-held
	PPGHE		hand-held, CE-conformant with E-stop
Weight	6.3	kg	PPG
	14	lbs	
	5.4	kg	PPGH, PPGHE
	12	lbs	

*as equipped at factory; options are available or different configurations

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The Coatings Company™

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Fax +65 545 0816

Information is subject to change without prior notice.

CLEMCO®

...the performance system.

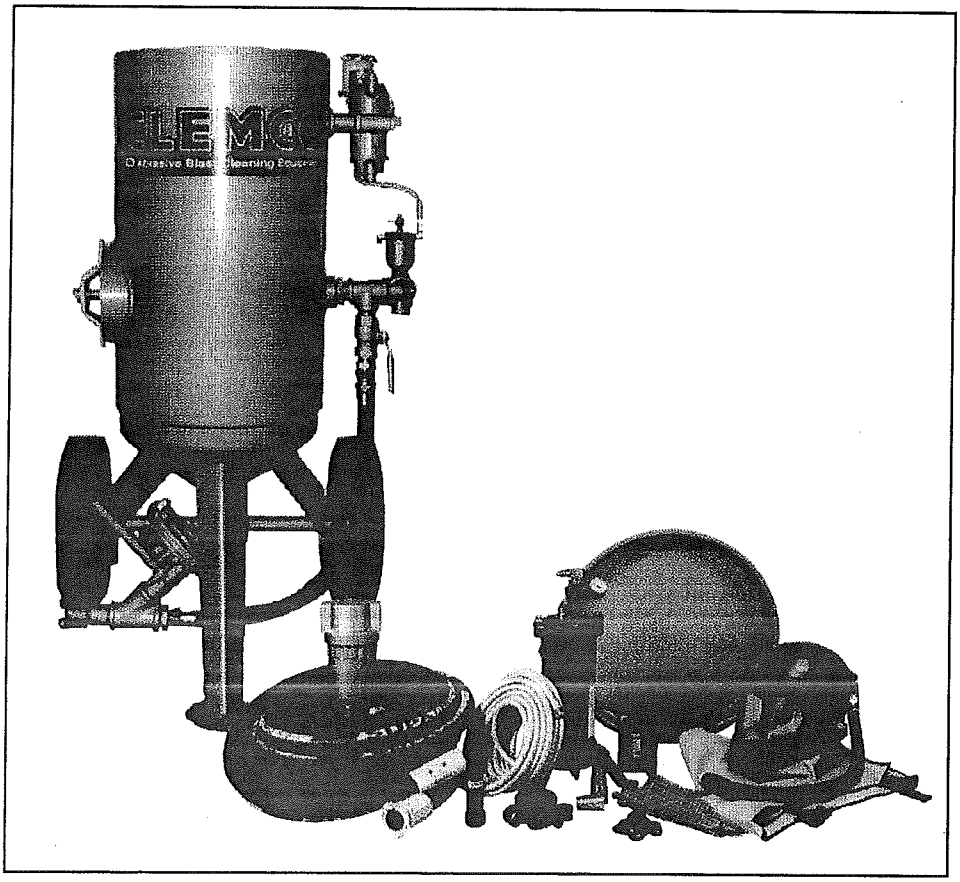
TECHNICAL DATA SHEET

3 Cuft Classic Blast Machine Systems

Stock Nos. 11260, 23909, and 23894

Description

Field-portable, medium-duty, industrial, single-chamber blast machine rated at 150 psi working pressure. Model 1648 has 1-1/4 inch piping and holds 3 cubic feet of media (300 lbs expendable, mineral abrasive). This unit is equipped with FSV abrasive metering valve and remote controls. Complete system includes coupled hose, nozzle, supplied air respirator, and many accessories.



Note: For safe, efficient blasting, read and follow the owner's manual and seek training for everyone who will use this equipment.

Purpose

High-performance, versatile blast cleaning system removes contamination, corrosion, mill scale, and coatings from most surfaces. Produces a uniform surface texture, and creates a surface profile to increase bonding for coatings.

Model 1648 holds 3 cubic feet of abrasive providing 15 minutes of blasting at 100 psi with a No. 6 (3/8-inch) nozzle.

Requirements for Operation

These items are required but not included with this equipment:

- Clean, dry, compressed air of sufficient volume to maintain desired pressure at the nozzle. Refer to Air Consumption Chart in Blast Off 2 booklet (publication stock no. 09294).
- Minimum of 50 psi needed to close the pop-up valve and pressurize the blast machine.
- OSHA-required remote control system that interrupts blasting if operator should lose control of the nozzle when blast machine is pressurized.
- NIOSH-approved, type CE, supplied-air respirator.
- Grade D breathing-air supply as defined by Compressed Gas Association Commodity Specification: G-7.1 (Refer to www.cganet.com).
- Abrasive blast media specifically manufactured for abrasive blasting and appropriate for your application.
- Appropriate blast suit, work boots, hearing and eye protection.

Description of Operation

The operator controls blasting from a remote control handle at the nozzle. Pressing the handle starts blasting; releasing it stops blasting. The blast machine contains abrasive and meters it into the compressed air stream.

Advantages

- Field-portable, industrial-quality blast machine manufactured to ASME code.
- 1-1/4-inch piping allows up to 50 percent more air flow when compared with 1-inch piping.
- Industrial-quality valves, piping and fittings designed to maximize air flow and minimize energy required to operate the system.
- FSV abrasive metering valve maintains smooth, consistent, adjustable media flow.

Approvals and Certifications

Clemco's quality management system is ISO 9001-2000 certified.

Blast machine pressure vessel built to American Society of Mechanical Engineers (ASME) specifications for 150-psi working pressure. Vessel is hydrostatically tested and National Board-certified.

Remote control system complies with OSHA regulation 1910.244 (b).

RE: Mac filter velocityFrom: "Diana Grimmett"
<dgrimmett@nxedgeinc.com>
Subject: RE: Mac filter velocity
Date: Wed, May 2, 2007 3:39 pm
To: "Gary Wallace"
<gwallace@nxedgeinc.com>,slstine@torf.org
Cc: "Nicholas Xydas" <nxydas@nxedgeinc.com>

Sarah,
After visiting with Gary he noticed he had said the ducting was 10" in reality it
is 12". Sorry for the error.
Diana

> -----Original Message-----
> From: Gary Wallace
> Sent: Wednesday, May 02, 2007 8:59 AM
> To: 'slstine@torf.org'
> Cc: Diana Grimmett; Nicholas Xydas
> Subject: Mac filter velocity
>
> Sarah,
>
> The feet per minute velocity of the Mac filter unit is averaging 2960. The ducting
will be 10" diameter.
>
> Gary Wallace
Download this as a file

MAC3 Exit Flow Rate-
2960 feet/minute * pi/4 * (1 foot)**2 = 2325 cubic feet per minute

FARR
Air Pollution Control

Emissions Performance Statement
For
NxEdge Inc of Boise

Material Filtered: Aluminum Oxide (Thermal Spray)
AC ratio: Not to exceed 2.5:1
Inlet Grain Loading: Not to exceed 10 grains per DSCF

Farr Company warranties that the emissions from the RetroFit Filter Model – HMPDF2UFOP-154, Part Number - 210823005 (HemiPleat Flame Retardant Ultra High Efficiency) will not exceed 0.002 gr/dscf in particulate emissions for one year from startup and it is expected that the emissions should be below 0.001 gr/dscf.
Farr Company also warranties these filters will provide an efficiency of 99.99% on .5 micron particles (by weight) if operated under normal conditions and a 2.0" w.g. or higher of differential pressure is maintained.
If a verification stack test is to be performed, it must be done at least 30 days after startup, and no more than 90 days after startup. If emissions level is not met, then Farr will be responsible for supplying a higher efficiency filter media to meet emissions level. Farr requests proper notification for any stack test in order to be present at the test. Farr will not be responsible for the costs associated with any stack tests.

The following conditions will apply to this warranty:
(1) The collectors will be operated per industry standard practices, (Reference Collector Operating Instruction Manual)
(2) Upset conditions, as defined as excessive oil or hydrocarbons, loss of power to the cleaning system, excessive moisture, abrasion due to improper evacuation of dust collector hopper or exceeding air flow specified, may void this warranty.
(3) Review of inlet duct design by Farr Company.
(4) Daily records will be kept on pressure drop across the filters.
(5) Under no circumstances will Farr Company be responsible for incidental or consequential damages.

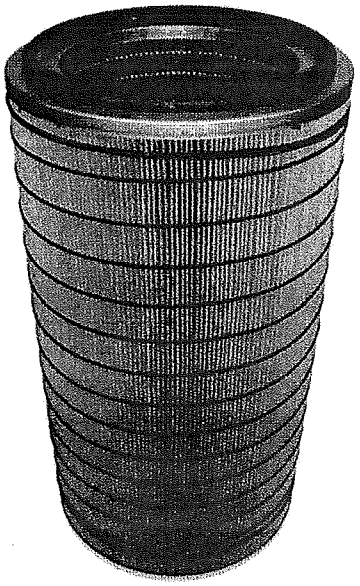
Lee Morgan
President

FARR
Air Pollution Control

HEMIPLEAT™ Data Sheet

HemiPleat™ Retrofit Cartridges

to fit Competitive Collectors



- Improve the performance or solve problems of existing collector systems. FARR filter cartridges are made with the new HemiPleat™ PolyTech™ media, the most advanced pulse-cleaned media ever made.
- The HemiPleat separator bead opens up the pleat uniformly, allowing more effective cleaning and lower pressure drop.
- FARR offers replacement upgrade cartridges to fit:

✓ American Air Filter®	✓ Torit®
✓ MAC Equipment®	✓ UAS/Dust-Hog®
✓ Pneumafil®	✓ Wheelabrator®

Specifications

Efficiency:	99.99% on 0.5 micron and larger particles by weight
Air Permeability:	25-35 cfm/sq. ft. per 0.5" w.c. (457 - 640 m^3/m^2h at 125 Pa)
Mullen Burst	(Dry) 40 psi (2.8 bars) 20 psi (1.4 bars) - Minimum
Gasket:	Polyisoprene molded closed cell gasket
Pans:	Galvanized steel (top & bottom) Optional: Stainless steel
Filter Sealant:	Solid polyurethane top/bottom
Max. Temps:	160°F (52°C) Operating 180°F (60°C) Surge

- External helical cords and internal screen secure the filter element from movement.

Poly Blend Filter Media:

HMPTS - PolyTech Standard (Color: green) - MERV 11/12
Proprietary blend of cellulosic fibers and polyester fibers with a moisture resistant silicone treatment for optimum dust release characteristics yielding long service life at high filtration efficiencies.

HMPTC - PolyTech Carbon Impreg. (Color: black) - MERV 11/12
Base HMPTS media described above, chemically treated and impregnated with carbon for static dissipation.

HMPTF - PolyTech Flame Retardant (Color: off white with yellow stripes) - MERV 11/12 - Base HMPTS media described above, chemically treated with a fire retardant.

HMPTU - PolyTech Ultra High Efficiency (White/green) MERV 15/16 - Base HMPTS media described above with a microfiber synthetic melt blown surface laminate that yields the industry's best filtration efficiency at 99.999% on 0.5 micron and larger particles by weight.

HMPTUF - PolyTech Flame Retardant Ultra High Efficiency (White/off white media) - MERV 15/16 - HMPTF fire retardant media described above with a microfiber synthetic melt blown surface laminate that yields the industry's best filtration efficiency at 99.999% on 0.5 micron and larger particles by weight.

MATERIAL SAFETY DATA SHEET

For Coatings, Resins and Related Materials

Section 1 - Identification of the Substance/Preparation and the Company

A.I 1800 Wire (Apple PS# T186 Monday, January 30, 2006

TAFA Incorporated
A Praxair Surface Technologies Company
146 Pembroke Road
Concord, NH 03301
USA

Phone:	(603) 224-9585	**Mon-Fri**
In Case of Emergency:	(603) 224-9585	**7:00-3:30**
Chemtrec:	800/424-9300	**USA**

Section 2 - Composition/Information on Ingredients

Nickel

weight %:	93
CAS No.:	7440-02-0
Index No.:	n/a

Hazards:

Xn - Harmful

Risks:

40/20	- Possibility of irreversible effects - inhalation
40/22	- Possibility of irreversible effects - ingestion
42	- May cause sensitization by inhalation
43	- May cause sensitization by skin contact

Aluminum

weight %:	5
CAS No.:	7429-90-5
Index No.:	n/a

Hazards:

Xn - Harmful

Risks:

20 - Harmful by inhalation

Molybdenum

weight %: 2
CAS No.: 7439-98-7
Index No.: n/a

Hazards:
Xn - Harmful
Risks:
20 - Harmful by inhalation
22 - Harmful by ingestion

7440-02-0 (Nickel)
ACGIH/TLV: 1 mg/m3 ***OSHA/PEL:*** 1 mg/m3
7429-90-5 (Aluminum)
ACGIH/TLV: 10 mg/m3 ***OSHA/PEL:*** 15 mg/m3
7439-98-7 (Molybdenum)
ACGIH/TLV: 10 mg/m3 ***OSHA/PEL:*** 15 mg/m3

Section 3 - Hazards Identification

Spray arc wire is generally not considered hazardous in the form shipped (wire), However, if your process involves grinding, melting, welding cutting or any other process that causes release of dust or fume, hazardous levels of dust or fume of the contituents of this alloy could be generated

Section 4 - First-Aid Measures

As shipped this material is an article. The likelihood for hazardous consequenses through eye or skin contact, inhalation or ingestion would be considered minimal. INHALATION: Remove person from exposure to fresh air. If breathing difficulty occurs, get prompt medical attention. SKIN/EYE CONTACT: Flush eye with plenty of water for 15 minutes, seek medical attention if irritation persists. Wash skin with soap and water, if rash develops, seek medical attention.

The hazards of this material are mainly due to its sensitizing and mild irritating properties. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

Section 5 - Fire-Fighting Measures

"WARNING: Dust by-product produced from thermal spraying or other use may be EXTREMELY REACTIVE, viz., combustible or explosive. Special dust handling is required. See precautions in item #7 below. Do not use water in fighting a metal fire. Use a class D extinguisher.

Section 6 - Accidental Release Measures

Land/Water Spill: As Shipped, this product does not pose a hazard to the environment

Section 7 - Handling and Storage

In General store away from acids and oxidizers. Dusts from spraying activites require adequate dust handling equipment. BACT usually consists of dust collectors utilizing HEPA filtration. All dusts may pose fire or explosion hazards if improperly handled. Handle in a manner to keep blowing dust to a minimum as many dusts pose significant health hazards when inhaled.

PRAXAIR

Material Safety Data Sheet

1 . Product and company identification

Product name : 80T - 18/8 Stainless Steel Wire

Supplier : TAFA Incorporated
A Praxair Surface Technologies Company
146 Pembroke Road
Concord, NH 03301
USA
(603) 224-9585

Code : T123

Validation date : **12 January 2007**

In case of emergency : (603) 224-9585TAFA Incorporated
A Praxair Surface Technologies Company
146 Pembroke Road
Concord, NH 03301
USA
(603) 224-9585

Chemtrec: 1-800-424-9300

Product type : Solid.

2 . Hazards identification

Physical state : Solid.

Odor : Oil of anise. Odorless.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. SUSPECT CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER.

Avoid exposure - obtain special instructions before use. Contains material that can cause target organ damage. Contains material which may cause cancer. Risk of cancer depends on duration and level of exposure.

Potential acute health effects

Inhalation : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Skin : No known significant effects or critical hazards.

Eyes : No known significant effects or critical hazards.

Potential chronic health effects

Chronic effects : Contains material that can cause target organ damage.

Carcinogenicity : Contains material which may cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Target organs : Contains material which causes damage to the following organs: blood, kidneys, lungs, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea, nose/sinuses.

Over-exposure signs/symptoms

Inhalation : No specific data.

2 . Hazards identification

Ingestion : No specific data.

Skin : No specific data.

Eyes : No specific data.

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

3 . Composition/information on ingredients

Name	CAS number	%
Iron	7439-89-6	69
Chromium - Cr	7440-47-3	19
Nickel	7440-02-0	10
Manganese	7439-96-5	2
Cobalt - Co	7440-48-4	1

4 . First aid measures

Eye contact : Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Skin contact : Flush contaminated skin with plenty of water Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ingestion : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing or wear gloves.

Notes to physician : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

MATERIAL SAFETY DATA SHEET

Section 1 : Name and Product

Supplier: American Abrasive Products, Inc.
Address: 17635-D East Rowland Street, City of Industry, California 91748
Trade Name, Common Name or Specification: N/M
Chemical Family or Product Type: **Brown Fused Aluminum Oxide**
Flammability Rating ☑ Health Rating ☑ Reactivity Rating ☑ Hazard Rating :
Please rate consistent with NFPA code
Emergency Telephone No. : (626)912-8866
Contact: American Abrasive Products, Inc.
Revision Date: August, 2006

Section 2. : Composition

Chemical Name	% Percent By Weight	Common Name	OSHA* REG. (Y/N)	CAS #	OSHA Permissive Exposure Limit (per cubic meter)	ACGIH Rec. Limits TLV (per cubic meter)	OSHA Carcinogen (Y/N)
Aluminum Oxide (Al_2O_3)ϕ	≥ 85	Aluminum Oxide	Y	1344-28-1	15 mg/m³	10 mg/m³	N
Titanium Dioxide (TiO_2)	1-4	Titanium Dioxide	Y	13463-67-7	15 mg/m³	10 mg/m³	N
Iron Oxide (Fe_2O_3)	0.1-1	Iron Oxide	Y	1309-37-1	10 mg/m³	5 mg/m³	N
Silicon Dioxide (SiO_2)**	0.2-1	Silicon Dioxide	Y	7631-86-9	80 mg/m³ / % SiO_2	30 mg/m³ / % Quartz + 3	N
Magnesium Oxide (MgO)	0.2	Magnesium Oxide	Y	1309-48-4	15 mg/m³	10mg/m³	N
Calcium Oxide (CaO)	0.1	Calcium Oxide	Y	1305-78-8	5 mg/m³	2 mg/m³	N

PEL & TLV for SiO_2 = (10 mg/m³) / (% Respirable SiO_2 + 2); Respirable Fraction: 5 mg/m³

* Materials are regulated by OSHA 29 CFR 1910, 1200 Hazard Communication Standard.

**SiO_2 value shown is chemically combined, not free silica. It is in the form of a glassy slag within the grains of fused alumina.

ϕ Non-Fibrous form of Aluminum Oxide

Listed as Carcinogen by:

1. American Conference of Government Industrial Hygienists (ACGIH)
2. International Agency for Research on Cancer Monographs (IARC)
3. Nation Toxicology Program (NTP)
4. California Proposition 65 List (1988)

Section 3. : Physical and Chemical Data

Boiling Point (°C) : Sublimes	Specific Gravity (H_2O) = 1): 3.95	Percent Volatile by Volume (%): NA
Melting Point(°C) : 2040 °C	Vapor Density (Air = 1): NA	Oxidizing Properties: None
pH (10% slurry): NA	Vapor Pressure (mmHg): Essentially 0	Explosive Properties: None
Solubility in Water : Insoluble	Solubility in Alcohol : Insoluble	Appearance: Light to Dark Brown
Solubility in Other Solvent:	Partially soluble in HF	Odor: Odorless

Section 4. : Fire and Explosion Data

Flash Point: NA	Flammable Properties: Not flammable
Extinguishing Media: Compatible with all extinguishing media	Flammable Limits: UEL: NA LEL: NA
Special fire fighting Procedures :	Not required
Auto Ignition Temperature:	Not self Igniting
Unusual Fire and Explosion Hazard Potential :	None

RECEIVED 01-29-'07 11:33 FROM- TO- NXEDGE P001/003

Emissions Unit - General **Form EU0**

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
03/27/07

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

Company Name:	Facility Name:	Facility ID No:
NxEdge, Inc.		001-00202
Brief Project Description:	Facility Equipment and Throughput Modifications	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

1. Emissions Unit (EU) Name:	AEC PARTS PREP ROOM ONE
2. EU ID Number:	AECPP1
3. EU Type:	☐ New Source ☒ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
4. Manufacturer:	W.W. GRAINGER, INC.; TITAN ABRASIVE SYSTEMS
5. Model:	DAYTON 5C532 FAN; TITAN 4836 RPD CABINETS (2)
6. Maximum Capacity:	2790 CFM
7. Date of Construction:	2006
8. Date of Modification (if any)	
9. Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 18.

EMISSIONS CONTROL EQUIPMENT

10. Control Equipment Name and ID:	Media Reclaimer and Cartridge Filter (2)		
11. Date of Installation:	2006	12. Date of Modification (if any):	
13. Manufacturer and Model Number:	Titan 4836 RPD (2)		
14. ID(s) of Emission Unit Controlled:	AECPP1		
15. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
16. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	99.8%	99.8%				

17. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

18. Actual Operation	48 HRS/WEEK, 50 WEEKS/YR (NON-CONTINUOUS)
19. Maximum Operation	8760 HRS/YR

REQUESTED LIMITS

20. Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, check all that apply below)
☐ Operation Hour Limit(s):	
☐ Production Limit(s):	
☒ Material Usage Limit(s):	50,000 LBS/YEAR ALUMINUM OXIDE MEDIA
☐ Limits Based on Stack Testing	Please attach all relevant stack testing summary reports
☐ Other:	
21. Rationale for Requesting the Limit(s):	EMISSIONS MUST BE CONTROLLED TO COMPLY WITH AMBIENT AIR QUALITY STANDARDS

3.6 AEC Parts Preparation Room One

Two media blasting cabinets are located in a small room in the Advanced Engineered Coatings (AEC) area. This area was previously referred to as the Semiconductor Business Unit (SBU). The cabinets are equipped with reclaimer cyclones and filter units on their exhaust streams and vent into the room. The room is equipped with a ventilation fan used primarily in the summer for employee comfort. However, because the fan exhausts outside and could potentially emit pollutants, the media cabinets are included in this permit modification.

Aluminum oxide media (typically 60 grit) is used in the cabinets to clean and prepare parts for coating in the AEC area. The cabinets are both Titan Model 4836 RPD. A specification sheet for the cabinets is attached, as is correspondence from the cabinet manufacturer documenting the control efficiency for the emission control equipment as 99.8% for particles 0.5 micron in diameter and larger. The wall-mounted, room exhaust fan is a Dayton Model SC532A that fits in an 18 inch square opening, 4 feet above grade. The emission location, EP-16, is shown on Form PP and is located on the west side of the facility.

Based on NxEdge purchase records for the last two years, aluminum oxide new media usage in the AEC area has been 14,000-20,000 pounds per year.[13] NxEdge's media purchase records are provided in Table 3.6B. This AEC area usage is divided between a total of four cabinets (see Section 3.7). Assuming half the aluminum oxide is used in Room One, maximum use has been 10,000 pounds of media per year. NxEdge currently operates 40-48 hours per week. To estimate uncontrolled emissions (continuous operations), current media usage is prorated up to 24/7 operation year-round. This equals 50,000 pounds of new aluminum oxide media per year.

Aluminum oxide is a durable media that can last through multiple blasting cycles. NxEdge uses the media approximately six times before disposing and replacing with cabinet inventory with fresh aluminum oxide.[14]

Emissions from AEC Prep Room One are estimated in Table 3.6A. Uncontrolled emissions are based on the unrestricted media usage and media recycle rate described above, and an emission factor for unabated blasting of 20 pounds PM_{10} emissions per ton of abrasive. [15] In developing the emission factor all particles emitted were considered to be PM_{10}, so the PM_{10} emission rate is equal to the

[13] "February 2008 Purchase Records," email correspondence, Sherry Jenkins (NxEdge) to Sarah Stine (TEM), March 7, 2008.
[14] "RE: Air Permit Question- AEC Area," email correspondence, Carl Seelhoof (NxEdge) to Sarah Stine (TEM), May 14, 2008.
[15] "Abrasive Blasting (Confined)," Bay Area Air Quality Management District, May 15, 1998, www.baaqmd.gov/pmt/handbook/s11c01pd.htm.

aluminum oxide emission rate. Controlled aluminum and particulate emissions from the AEC Parts Prep Room One are estimated based on a control efficiency of 99 wt%.

The exhaust from AEC Part Prep Room 1 discharges outside at an elevation of four feet from grade. The exhaust is in a protected alcove but public access is not prevented. Uncontrolled aluminum oxide emissions from Room 1 are 0.34 pounds per hour, less than the TAP Screening Emission Level of 0.667 lb/hr. However, because of EP-16's location on the ambient air boundary, emissions from the room must be controlled to meet the air quality standard for aluminum oxide (see Section 7 for the complete modeling analysis of this volume source). The controlled emission rates of aluminum oxide and PM_{10} are included in the air dispersion modeling for this application. The proposed permit limit is 50,000 pounds per year of new aluminum oxide media used in AEC Parts Prep Room One.

Table 3-6A:
AEC Area Emissions- Part Preparation Room One

AEC Source: AECPP1	Equipment	Estimated Unrestricted New Media Usage[1]	Constituents	CAS Number	Constituent Concentration (max wt%)	Media Cycles[2]	Emission Factor (lb/ton media)[2]	Uncontrolled Emissions		Control Equipment Efficiency (%)[3]	Controlled Emissions	
		lb/yr						lb/hr	lb/yr		lb/hr	lb/yr
	Titan 4836RPD Blast Cabinets (2)	50000	Aluminum Oxide	1344-28-1	100%	6	20	0.342	3000	99%	0.0034	30.0

TAP Emissions Summary	TAP Type (24 hr or Annual Avgd EL)	Screening Emission Level (lb/hr)	Uncontrolled Emissions (lb/hr)	Controlled Emissions (lb/hr)	Controlled Emissions (lb/yr)
Aluminum	585 (24 hr)	0.667	0.342	0.0034	30.0

HAP Emissions Summary	Controlled Emissions (tons/yr)
No known HAPs emitted	

Criteria Pollutant Emissions Summary	Uncontrolled Emissions (tons/yr)	Controlled Emissions (lb/hr)	Controlled Emissions (tons/yr)
PM_{10}	1.50	0.00342	0.0150

Notes: 1. Uncontrolled media usage based on maximum usage over last two years prorated up from ~2000 operating hours per year to 8760 hrs/yr operation.
2. NxEdge reuses aluminum oxide media for six cycles before discarding.
2. From "Abrasive Blasting (Confined)," Bay Area AQMD, May 15, 1998, www.baaqmd.gov/pmt/handbook/s11c01pd.htm
3. Per Titan Abrasive Systems, control efficiency is 99.8% for particles 0.5 microns in size and larger. For calculations, 99% used.

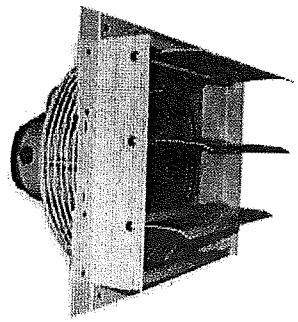
Table 3-6B:
AEC and C/R Area Media Purchase Records

Area	Description	UoM	2006												12-month Total
			Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
AEC	36 grit Aluminum Oxide	LB	0	50	0	200	900	800	1150	300	800	400	1050	300	5950
AEC	46 grit Aluminum Oxide	LB				0	0	0	0	0	0	0	0	0	0
AEC	60 grit Aluminum Oxide	LB	0	1050	300	350	400	350	400	300	200	500	450	400	4700
AEC	80 grit Aluminum Oxide	LB	50	400	350	300	500	450	300	500	200	0	450	0	3500
														Total Aluminum Oxide =	14150
AEC	60 grit Silicon Carbide	LB	50	0	50	50	0	150	50	50	0	0	0	150	550
C&R	150 grit Aluminum Oxide	LB	150	100	100	100	200	100	250	200	150	350	200	200	2100
C&R	Glass bead	LB	0	150	150	250	200	100	50	100	150	150	150	200	1650

Area	Description	UoM	2007												12-month Total
			Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
AEC	36 grit Aluminum Oxide	LB	700	450	450	0	300	600	600	800	1500	800	750	900	7850
AEC	46 grit Aluminum Oxide	LB	0	63.5	0	0	36.5	0	0	0	0	0	0	0	100
AEC	60 grit Aluminum Oxide	LB	50	300	250	450	400	400	300	1400	450	650	1050	1000	6700
AEC	80 grit Aluminum Oxide	LB	100	100	650	150	250	550	350	700	300	750	500	1100	5500
														Total Aluminum Oxide =	20150
AEC	60 grit Silicon Carbide	LB	50	100	0	450	0	0	50	200	50	50	0	50	1000
C&R	150 grit Aluminum Oxide	LB	250	100	250	150	400	350	200	150	150	150	150	250	2550
C&R	Glass bead	LB	150	150	200	150	50	100	100	200	150	150	100	150	1650

GRAINGER
FOR THE ONES WHO GET IT DONE

Print *printed* April 17, 2008



Exhaust Fan,18 In

Exhaust Fan, Corrosion Resistant Shutter Mount, Propeller Dia 18 In, CFM @ 0.000-In SP 2790, @ 0.125-In SP 1961, Motor RPM 1075, 115 Volts, 60 Hz, 1 Phase, Full Load Amps 4.1, Motor HP 1/4, 12.5 Sones @ 0.000-In SP @ 5 Ft, Motor Type Permanent Split Capacitor, Motor Enclosure Totally Enclosed Air-Over, Height 21 In, Width 21 In, Max Depth 15 1/8 In, Sq Opening Required 19 In, Frame Material Fiberglass, Propeller Material Fiberglass Reinforced Polypropylene, Number of Blades 8

Grainger Item #	5C532
Price (ea.)	**N/A**
Brand	DAYTON
Mfr. Model #	5C532
Ship Qty.	1
Sell Qty. (Will-Call)	1
Ship Weight (lbs.)	31.25
Usually Ships	Discontinued
Catalog Page No.	N/A

Price shown may not reflect your price. Log in or register.

This item has been discontinued and cannot be ordered online.

Some discontinued items may be available through your local branch . An alternate item(s) may be available online. See the Alternate Products tab below.

Additional Info

There is currently no additional information for this item.

Tech Specs

Item: Exhaust Fan
Type: Corrosion Resistant Shutter Mount
Propeller Dia. (In.): 18
CFM @ 0.000-In. SP: 2790
CFM @ 0.125-In. SP: 1961
CFM @ 0.250-In. SP: 1427
CFM @ 0.375-In. SP: 604
Sones @ 0.000-In. SP @ 5 Ft.: 12.5
Max. Ambient Temp. (F): 104
Voltage: 115
Hz: 60
Phase: 1
Full Load Amps: 4.1
Motor HP: 1/4
Bearing Type: Ball
Motor RPM: 1075
Motor Type: Permanent Split Capacitor
Motor Enclosure: Totally Enclosed Air-Over
Motor Insulation: Class B
Height (In.): 21
Width (In.): 21
Max. Depth (In.): 15 1/8
Sq. Opening Required (In.): 19
Frame Material: Fiberglass
Guard Material: Steel
Wire Guard Finish: Epoxy Coated
Propeller Material: Fiberglass Reinforced Polypropylene
Number of Blades: 8

Optional Accessories

Control,Coil Bulb

Item #: 4LZ94
Brand: DAYTON
Usually Ships: Today
Price (ea): $37.30

Alternate Products

Fan,Exhaust,16 In

Item #: 4C861
Brand: MULTIFAN
Usually Ships: Today
Price (ea): $563.50

Fan,Exhaust,18 In

Item #: 4C862
Brand: MULTIFAN
Usually Ships: Today
Price (ea): $627.00

Exhaust Fan,18 In,115 V,2790 CFM

RPD SERIES CABINET

PRODUCTS

OPERATION MANUALS

PARTS LISTS

PRICE QUOTATION

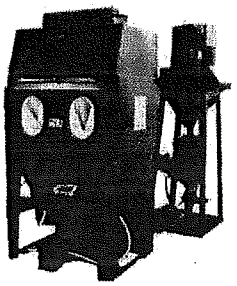
GOVERNMENT SALES

CONTACT US

SITE MAP

USED/SURPLUS EQUIPMENT

FEATURES



- Self adjusting door latch
- Adjustable abrasive reclaim
- Pull through style cartridge dust collector
- Safety guard on foot pedal
- Large view window - quick change
- Tungsten carbide blast nozzle
- Heavy duty cast iron exhaust valve
- Fluorescent lighting
- A.S.M.E. code pressure vessel - conical bottom, 1 cu. ft.
- "Blow Off" gun
- Pressure regulator - Moisture Separator
- 3/16" perforated reinforced floor, 1,000 lb. capacity
- 12 gauge steel construction - all welded
- Pulse cleaning filter cartridge
- Heavy duty cast iron media regulator with clean out
- Door safety interlocks
- Double panel - knife edge sealing
- Vented intake system cleans view window
- Media reclaim - 150 lb. capacity media storage

MODEL	INSIDE DIMENSIONS	FLOOR DIMENSIONS	DOOR	DUST COLLECTOR
3636 RPD	36"W x 36"D x 38"H	48"W x 40"D x 70"H	2 Side 34"W x 34"H	(1) 700 CFM Cartridge type with reclaim
4836 RPD	48"W x 36"D x 36"H	70"W x 50"D x 80"H	2 Side 32"W x 30"H	(1) 700 CFM Cartridge type with reclaim
4848 RPD	48"W x 48"D x 36"H	70"W x 60"D x 80"H	2 Side 40"W x 30"H	(1) 700 CFM Cartridge type with reclaim
6048 RPD	60"W x 48"D x 36"H	80"W x 60"D x 80"H	2 Side 40"W x 30"H	(1) 700 CFM Cartridge type with reclaim
6060 RPD	60"W x 60"D x 44"H	80"W x 80"D x 80"H	2 Side 50"W x 40"H	(1) 900 CFM Cartridge type with reclaim
7272 RPD	72"W x 72"D x 63"H	96"W x 96"D x 96"H	2 Side 67"W x 58"H	(1) 900 CFM Cartridge type with reclaim
12060 RPD	120"W x 60"D x 44"H	180"W x 80"D x 90"H	2 Side 50"W x 40"H	(2) 900 CFM Cartridge type with reclaim

TITAN

COVER PAGE

Date: 4/10/08

Please deliver the following pages to:

Name:	TORF ENVIRONMENTAL
Fax Number:	208-345-8285
Attn:	**SARAH STINE**
References:	NXEDGE BLAST CABINETS

From: Name: Stacey Rudisill

We are transmitting 2 page(s) (including cover page). If you have any changes or corrections, please send via return telefax. If all pages are not received or are not legible, please call as soon as possible.

FAX NUMBER: (570)648-8371

MESSAGE:

Please find attached information on the dust collector filters, also all the dust collectors are 900 c.f.m.

Should you have further questions please contact me direct.

Regards,

Stacey Rudisill

TITAN ABRASIVE SYSTEMS, INC.
308 Valley Road, Pitman, Pennsylvania 17964, (570)648-4774
Web Address: www.titanabrasive.com
Email: titaninc@pa.net

Test Flow Rate	500 C F M
Initial Resistance	55" WC
Initial Atmospheric Dust Spot Efficiency	42.3%
Average Atmospheric Dust Spot Efficiency	95.4%
Average A C Fine Dust Weight Arrestance	100%

Particle Efficiency by Particle Size
Test Dust-A C Fine

Particle Size:

0.5	99.8%
1.0	99.9%
2.0	100%
5.0	100%
10.0 and Higher	100%

AEC Parts Prep Rooms
Blast Cabinet Filter Certification

TORF
ENVIRONMENTAL
MANAGEMENT

FAX TRANSMITTAL

3459 E. Boulder Heights Dr. Boise, Idaho 83712 208.345.7222 fax 208.345.8285 www.torf.us

To: Titan Abrasive Systems

Number: 570-648-8371

Attention: Stacey Rudisill

Date: April 9, 2008

Subject: NxEdge Blast Cabinets

Stacey- Below is the information you requested for the media cabinets owned by NxEdge, Inc. in Boise, Idaho. As we discussed, I am looking for overall emission control efficiency data for the system or particulate loading in the filter outlet stream. Typically NxEdge uses 36-80 grit aluminum oxide media in these cabinets, with 36 grit silicon carbide also used in one. Please also let me know the rated CFM of the 2 HP fans.

Cabinet 1: Titan Model 4836
Serial Number TR19 05
Fan Rating; 2 HP

Cabinet 2: Titan Model 4836
Serial Number 432149 07
Fan Rating: 2 HP

Cabinet 3: Titan Model 4846
Serial Number T128 02
Fan Rating 2 HP

Cabinet 4: Titan Model 4848 RPD
Serial Number TR002
Fan Rating 2 HP

Emissions Unit - General **Form EU0**

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
03/27/07

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

Company Name: NxEdge, Inc.	Facility Name:	Facility ID No: 001-00202
Brief Project Description:	Facility Equipment and Throughput Modifications	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

1. Emissions Unit (EU) Name:	AEC PARTS PREP ROOM TWO
2. EU ID Number:	AECPP2
3. EU Type:	☐ New Source ☒ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
4. Manufacturer:	GREENHECK FAN CORP.; TITAN ABRASIVE SYSTEMS
5. Model:	H-CUBE-098 FAN; TITAN 4848 & EMPIRE PF3648 CABS.
6. Maximum Capacity:	1180 CFM
7. Date of Construction:	2006
8. Date of Modification (if any)	
9. Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 18.

EMISSIONS CONTROL EQUIPMENT

10. Control Equipment Name and ID:	Media Reclaimer and Filter Units (3)		
11. Date of Installation:	2006	12. Date of Modification (if any):	
13. Manufacturer and Model Number:	Titan 4848 RPD (2)/ Empire DCM-80A (1)		
14. ID(s) of Emission Unit Controlled:	AECPP2		
15. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No		
16. Does the manufacturer guarantee the control efficiency of the control equipment?	☒ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	99.8/99%	99.8/99%				

17. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

18. Actual Operation	48 HRS/WEEK, 50 WEEKS/YR (NON-CONTINUOUS)
19. Maximum Operation	8760 HRS/YR

REQUESTED LIMITS

20. Are you requesting any permit limits?	☐ Yes ☒ No (If Yes, check all that apply below)
☐ Operation Hour Limit(s):	
☐ Production Limit(s):	
☒ Material Usage Limit(s):	50000 LB/YR ALOX MEDIA, 55000 LB/YR TOTAL MEDIA
☐ Limits Based on Stack Testing	Please attach all relevant stack testing summary reports
☐ Other:	
21. Rationale for Requesting the Limit(s):	EMISSIONS MUST BE CONTROLLED TO COMPLY WITH AMBIENT AIR QUALITY STANDARDS

3.7 AEC Parts Preparation Room Two

Two media blasting cabinets used to prepare parts for coating in the AEC area are located in a small room in the Fluoropolymer (FP) Area. The cabinets are equipped with reclaimer cyclones and filter units and vent into a common exhaust duct that emits outside above the building roof. The 14 inch square exhaust is equipped with a rain-cap. The location of the emission point, EP-15, is shown on Form PP. This emission point was not included in the previous permit.

Aluminum oxide media (36-80 grit) is used in the cabinets to clean and prepare parts for coating in the AEC area. The cabinets are both Titan Model 4848 RPD. A specification sheet for the cabinets is attached (see Section 3.6), as is correspondence from the cabinet manufacturer stating the control efficiency for the emission control equipment is 99.8% for particles 0.5 micron in diameter and larger.

A third media blasting cabinet loaded with silicon carbide media is located just outside Room Two in a hallway. This cabinet is also equipped with a cyclone and filter unit, but it vents into the building. Given the proximity to Room Two, emissions from this cabinet were included in the Room Two total. The third cabinet is an Empire Model PF3648 equipped with a DCM-80A Dust Collector. A specification sheet for the Empire cabinet is attached. Per the manufacturer's published material, the emission control efficiency of this unit is 99%.

Based on NxEdge purchase records for the last two years, aluminum oxide media usage in the AEC area has been 14,000-20,000 pounds per year.[16] NxEdge's media purchase records are provided in Table 3.6B. This AEC area usage is divided between a total of four cabinets (see Section 3.6). Assuming half the aluminum oxide is used in Room Two, maximum use has been approximately 10,000 pounds of media per year. NxEdge currently operates 40-48 hours per week. To estimate uncontrolled emissions (continuous operations), current media usage is prorated up to 24/7 operation year-round. This equals 50,000 pounds of new aluminum oxide media per year.

Based on NxEdge purchase records for the last two years, new silicon carbide usage in the Empire cabinet has been 550-1000 pounds per year. NxEdge currently operates 40-48 hours per week. To estimate uncontrolled emissions (continuous operations), current media usage is prorated up to 24/7 operation year-round. This equals 5,000 pounds of new silicon carbide media per year.

Aluminum oxide is a durable media that can last through multiple blasting cycles. NxEdge uses the media approximately six times before disposing and replacing with cabinet inventory with fresh

[16] "February 2008 Purchase Records," email correspondence, Sherry Jenkins (NxEdge) to Sarah Stine (TEM), March 7, 2008.

aluminum oxide.[17] Silicon carbide is even more durable than aluminum oxide.[18] The silicon carbide media is assumed to be used ten times before disposal.

Emissions from the AEC Prep Room Two are estimated in Table 3.7. Uncontrolled emissions are based on the unrestricted media usage and media recycle rates described above, and an emission factor for unabated blasting of 20 pounds PM_{10} emissions per ton of abrasive (in developing the emission factor all particles emitted were considered to be PM_{10} so the PM_{10} emission rate is equal to the constituent emission rate).[19]

Controlled aluminum and particulate emissions from the AEC Parts Prep Room Two are estimated based on a control efficiency of 99 wt%. Controlled silicon carbide emissions from Room Two are estimated based on a control efficiency of 95%.

AEC Parts Prep Room Two is the only known source of silicon carbide emissions at the facility and the uncontrolled emission rate of 0.057 lb/hr silicon carbide is less than the TAP screening emission level of 0.667 lb/hr. Therefore, silicon carbide was not included in the facility's air dispersion modeling. The controlled emission rates of aluminum oxide and PM_{10} are included in the air dispersion modeling for this application (see Section 7). The proposed permit limits are 50,000 lbs per year of new aluminum oxide media and 55,000 lb/yr of total media used in AEC Parts Prep Room Two.

[17] "RE: Air Permit Question- AEC Area," email correspondence, Carl Seelhoof (NxEdge) to Sarah Stine (TEM), May 14, 2008.
[18] "Abrasive Blasting (Confined)," Bay Area Air Quality Management District, May 15, 1998, www.baaqmd.gov/pmt/handbook/s11c01pd.htm.
[19] Ibid.